ABSTRACT OF THE DISCLOSURE

An impluse response $h_{mn}(q)$ of each transmission path is estimated from N received signals r_m ($m=1, \cdots, M$) and a known signal (for a number of users equal to N, $n=1, \cdots, N$). $M \times N$ matrix $\mathbf{H}(q)$ having $h_{mn}(q)$ as an element and a $Q \times Q$ matrix $\mathbf{H}$ having $\mathbf{H}(q)$ as an element are determined (where Q represents a number of multipaths of each transmitted wave and $q=0, \cdots, Q-1$). A soft decision value $b'_n(k)$ is determined from decoded $\lambda_2 [b_n(k)]$, and this is used to generate an interference component matrix $\mathbf{B}'(k)$ to generate an interference replica $\mathbf{H} \cdot \mathbf{B}'(k)$. The interference replica $\mathbf{H} \cdot \mathbf{B}'(k)$ is subtracted from a received matrix $\mathbf{y}(k)$ to determine $\mathbf{y}'(k)$. $\mathbf{y}(k)$ and $\mathbf{H}$ are used to determine an adaptive filter coefficient $\mathbf{w}_n(k)$ to be applied to an n-th user in order to eliminate residual interference components in $\mathbf{y}'(k)$ according to the minimum mean square error criteria. $\mathbf{y}(k)$ is passed through $\mathbf{w}_n(k)$ to provide a log-likelihood ratio as a received signal from the user n from which interferences are eliminated.